



Beyond Nuclear
6930 Carroll Avenue
Suite 400
Takoma Park, MD 20912
Email: paul@beyondnuclear.org
Tel. 301 270 2209 x 3
www.beyondnuclear.org

October 20, 2011

Mr. Bill Borchardt, Executive Director
Office of Executive Director of Operations
United States Nuclear Regulatory Commission
Washington, DC 20555-0001

By email: Bill.Borchardt@nrc.gov, Executive Director of Operations, US NRC
Annette.Vietti-Cook@nrc.gov, Office of the Secretary, US NRC

**Request for Emergency Enforcement Action to Suspend the Restart and
Operation of the North Anna Nuclear Generating Station, Mineral, Virginia
per 10 CFR 2.206**

To Whom It May Concern:

On behalf of the below listed joint Petitioners, attached please find Petitioners' request for emergency enforcement actions as provided by 10 CFR 2.206 in the matter of the proposed restart and operation of the North Anna nuclear generating station following the August 23, 2011 earthquake centered in Mineral, Virginia.

Sincerely,

Paul Gunter and Kevin Kamps
Beyond Nuclear
6930 Carroll Avenue Suite 400
Takoma Park MD, 20912
Tel. 301 270 2209
Email: paul@beyondnuclear.org Web: www.beyondnuclear.org

Thomas Saporito, Senior Consultant
Saprodani Associates
Post Office Box 8413
Jupiter, FL 33468
Email: thomas@saprodani-associates.com

Web: <http://Saprodani-Associates.com>
Phone: [\(561\) 972-8363](tel:(561)972-8363) Fax: [\(561\) 972-8363](tel:(561)972-8363)

Paxus Calta
Not On Our Fault Line
56 Tupelo Ridge Rd.
Louisa, VA 23093
Phone: 541-505-0803
Email: paxus.calta@gmail.com

Alex Jack
Planetary Health, Inc.
305 Brooker Hill Road
Becket, MA 01223
Phone: [413-623-0012](tel:413-623-0012)
Email: shenwa@bcn.net
www.amberwaves.org

Scott Price
Public Policy Director
Alliance for Progressive Values
PO Box 14664
Richmond Va. 23221
Phone: [804-573-9635](tel:804-573-9635)
Email: sprice@apvonline.org
www.APVonline.org

John A. Cruickshank, Chair
Sierra Club - Virginia Chapter
422 East Franklin St.
Richmond, VA 23219
Phone: [434 973-0373](tel:434-973-0373)
Email: jcruickshank4@gmail.com
<http://www.vasierraclub.org/>

October 20, 2011

October 20, 2011

JOINT PETITIONERS

Beyond Nuclear / Not On Our Fault Line / Saprodani Associates
Sierra Club-Virginia Chapter / Alliance for Progressive Values / Planetary Health, Inc

_____)	
IN THE MATTER OF THE OPERATION OF)	DOCKETS
)	
NORTH ANNA NUCLEAR GENERATING STATION)	05000338
)	&
VIRGINIA ELECTRIC POWER COMPANY)	05000339
(aka Dominion Energy))	
)	
POST EARTHQUAKE RESTART)	
)	
REQUEST PER 10 CFR 2.206 FOR)	
EMERGENCY ENFORCEMENT ACTION)	
_____)	

**JOINT PETITION PER 10 CFR 2.206 IN REQUEST OF THE SUSPENSION OF THE
NORTH ANNA NUCLEAR GENERATING STATION RESTART AND OPERATION
PENDING EMERGENCY ENFORCEMENT ACTIONS**

INTRODUCTION

Now come the following groups and associations, Beyond Nuclear, Not On Our Fault Line, Saprodani Associates, Sierra Club- Virginia Chapter, Planetary Health, Inc. and Alliance for Progressive Values (hereafter collectively referred to as “the Petitioners”) who hereby petition the United States Nuclear Regulatory Commission (NRC) as provided by [10 CFR 2.206](#) to request the suspension of the operating license of Virginia

Electric Power Company (also known as Dominion) and a suspension to the restart of the North Anna Nuclear Generating Station pending emergency enforcement actions.

REQUESTED EMERGENCY ENFORCEMENT ACTIONS

The Petitioners jointly request that the suspension of the operating license and restart be contingent upon and until such time that the following actions are performed and completed:

- 1) Prior to the restart approval of North Anna Units 1 and 2, Virginia Electric Power Company shall submit a formal license amendment request to the NRC to reanalyze and re-evaluate the North Anna nuclear power station's design basis for earthquakes in order to obtain a license amendment that is supported by new seismic evaluation and plant retrofit;
- 2) Prior to restart approval NRC shall require that both North Anna Units 1 and 2 be subject to the same level and rigor of deterministic inspections and safety analyses that include the full reactor core offload inspections of the condition of safety-related reactor core internals, fuel core assemblies and control rod mechanism for both units to reasonably assure the same level of deterministic oversight of both units and a focus on public health and safety over a industry production agenda;
- 3) Virginia Electric Power Company shall be required to reanalyze and re-qualify the adequacy and condition of the Lake Anna dam given the North Anna nuclear power station's Design Basis Earthquake criteria was exceeded by the

earthquake on August 23, 2011 so as to provide reasonable assurance of the one mile long earthen dam's reliability as a reactor safety-related structure;

- 4) Given the historical evidence that Virginia Electric Power Company was fined for making significant and deliberate material false statements to the federal licensing agency affecting the original North Anna Design Basis Earthquake criteria and given that the site's earthquake design criteria were exceeded by the August 23, 2011 earthquake, the NRC shall Order that Virginia Electric Power Company (Dominion) be held accountable for all further representations of material fact regarding the two unit North Anna reactor being sited on an earthquake fault and further reanalysis and plant modifications by making a formal license amendment request with the opportunity for full public hearings rights;

- 5) Virginia Electric Power Company must reanalyze and re-evaluate its Independent Spent Fuel Storage Installations' pads and dry casks in light of the damage done to them and the impacts documented at them due to the August 23rd earthquake, in order to determine that seismic safety and stability is reasonably assured going forward at North Anna nuclear power plant; likewise, NRC must verify that its earthquake safety regulations for dry cask storage, including 10 CFR § 72.212(b)(2) (i)(B) and 10 CFR § 72.212(b)(3), are in full regulatory compliance and not being violated, as well as for its dry cask Certificates of Compliance and dry cask technical specifications at North Anna. These re-analyses and re-

evaluations require re-writing both the Safety Evaluation Report and the Safety Analysis Report in regards to the ISFSIs, as well as strengthening technical design criteria for dry cask storage at North Anna to reasonably assure seismic safety. Both VEPCO and NRC must publicly ensure that dry cask radiation shielding and cask cooling systems, structures, and components were not negatively impacted by the earthquake damage and impacts of August 23rd, 2011, in order to adequately protect worker and public safety and health and the environment, and to reasonably assure regulatory compliance, given the high radiological hazards represented by the irradiated nuclear fuel storage within the ISFSIs.

RATIONALE FOR EMERGENCY ENFORCEMENT ACTIONS

The Petitioners request that the North Anna nuclear power plant operating license be suspended pending emergency enforcement action for the following reasons;

- 1) Prior to the restart approval of North Anna Units 1 and 2, Virginia Electric Power Company shall submit a formal license amendment request to the NRC to reanalyze and re-evaluate the North Anna nuclear power station's design basis for earthquakes in order to obtain a license amendment that is supported by a new seismic evaluation and plant retrofits;

In accordance with the aims of Title 10 Code of Federal Regulations [Appendix S of Part 50](#) –Earthquake Engineering Criteria for Nuclear Power Plants, Virginia Electric Power

Company (VEPCO) shall submit a license amendment request in view that ground acceleration movement from the earthquake of August 23, 2011 exceeded the design levels and licensing bases that the plant was originally licensed to and analyzed for.

The Petitioners set forth that the August 23, 2011 earthquake centered in Mineral, Virginia marks the first time in the United States that an earthquake has exceeded the design basis of a nuclear power plant, namely, the North Anna nuclear station as licensed to operate by Virginia Electric Power Company (Dominion).

The licensee acknowledges that the August 23rd seismic event created ground acceleration beyond the currently analyzed condition of the two unit reactor site as provided in the North Anna operating license for both the Operating Basis Earthquake (OBE) and the Design Basis Earthquake (DBE).

In response to a NRC Request for Additional Information, VEPCO replied September 27, 2011 stating, *“Dominion has confirmed that the August 23, 2011 earthquake exceeded the spectral accelerations for the Operating Basis Earthquake (OBE) and Design Basis Earthquake (DBE) for North Anna Power Station Units 1 and 2.”*¹

¹ “Virginia Electric and Power Company (Dominion) North Anna Power Station Units 1 and 2 Request for Additional Information Regarding the Earthquake on August 23, 2011 and Restart Readiness Determination Plan ,” ML11272A130, September 23, 2011, p. 1.



North Anna Design Basis Seismic Criteria (Station and ISFSI)

	Horizontal Peak Ground Acceleration (g) Rock	Vertical Peak Ground Acceleration (g) Rock	Horizontal Peak Ground Acceleration (g) Soil	Vertical Peak Ground Acceleration (g) Soil
OBE	0.06	0.04	0.09	0.06
DBE	0.12	0.08	0.18	0.12

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VEPCO provided the above slide in “North Anna Design Basis Seismic Criteria” at the September 5, 2011 meeting with the NRC.² In this slide ground acceleration is measured as a percentage of the gravitational constant, or “g.”

The North Anna Design Basis Earthquake (DBE) for “Horizontal Peak Ground Acceleration” in rock is indicated at 0.12 g. According to another Dominion slide as described by the company and reported in Platt’s Inside NRC, “Seismic waves move with different periods, or frequencies, of motion, often measured in Hertz, the number of

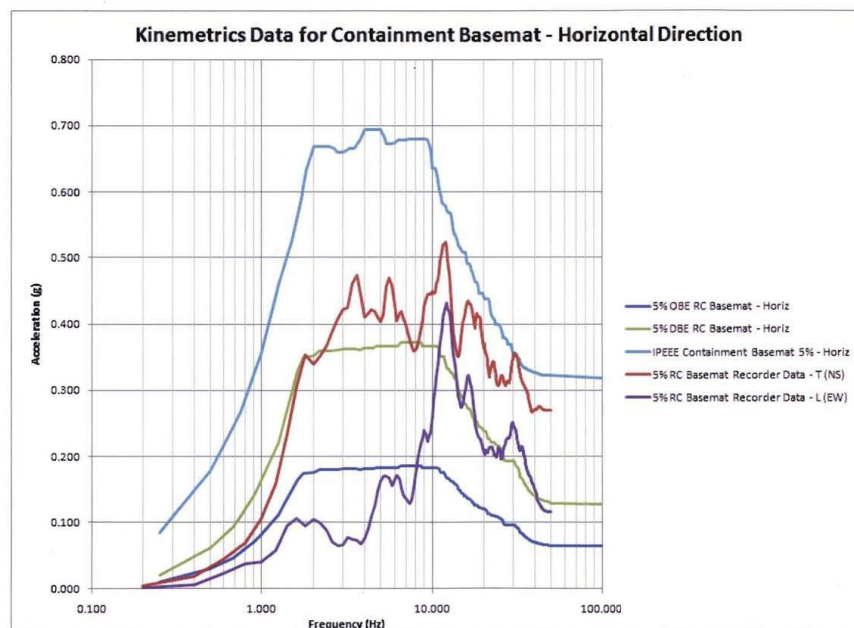
² Excerpt, Slide 31, “Overview of 08/23/11 Earthquake Response and Restart Readiness Demonstration Plan, North Anna Units 1 and 2,” Dominion, PowerPoint presentation to US NRC, Rockville, Maryland, September 5, 2011, <http://enformable.com/2011/09/nrc-dominion-overview-of-north-anna-nuclear-power-plant-earthquake-response-and-restart-readiness-demonstration-plan/>

cycles per second. The largest ground acceleration was a horizontal north south motion measured at around 0.5 g at just over 10 Hz, Dominion said in a chart presented during the meeting. Design basis at that frequency was about 0.35 g. The design basis for peak horizontal ground acceleration at 100 Hz is 0.12 g, Dominion said.”³

Dominion’s referenced measurements are indicated in Slide 32 depicted below.⁴



Comparison of Kinematics Data – Horizontal Direction



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³ “Dominion confirms quake exceeded North Anna design basis,” Inside NRC, Platts, Vol. 33, #19, September 12, 2011, p.1

⁴ Excerpt, Slide 32, “Overview of 08/23/11 Earthquake Response and Restart Readiness Demonstration Plan, North Anna Units 1 and 2,” Dominion, PowerPoint presentation to US NRC, Rockville, Maryland, September 5, 2011, <http://enformable.com/2011/09/nrc-dominion-overview-of-north-anna-nuclear-power-plant-earthquake-response-and-restart-readiness-demonstration-plan/>

The Petitioners assert that the reliability and accuracy of the measured kinematics data from the earthquake is further in question. The nuclear industry trade journal Platt's Inside NRC reported that NRC indicated during the October 3, 2011 Augmented Inspection Team Exit Meeting in Mineral, Virginia that there are "unresolved issues" that include "the location and performance of some seismic instrumentation." ⁵

The Petitioners assert that a uncertainty in the level exceedence of the North Anna design basis earthquake criteria and the lack of reliable data is compounded by the NRC inspection finding that the company misplaced the location of the seismic measuring instrumentation onsite. The Petitioners contend that the "unresolved issue" introduces significant uncertainty in a margin of error for the earthquake conditions that the nuclear reactor site experienced and as pertains to the plant's current existing unanalyzed condition.

The Operating Basis Earthquake is defined as the "*ground motion (OBE) is the vibratory ground motion for which those features of the nuclear power plant necessary for continued operation without undue risk to the health and safety of the public will remain functional. The operating basis earthquake ground motion is only associated with plant*

⁵ "NRC continues post-earthquake inspections at North Anna," Platts, Inside NRC , Vol. 33, #21, October 10, 2011, p.9

shutdown and inspection unless specifically selected by the applicant as a design input.”⁶

The Design Basis Earthquake (DBE) is defined as the set of conditions for which the nuclear power plant is designed, engineered, constructed and operated at to remain within analyzed safety margins during and following an earthquake of larger magnitude than any recorded in the geographic region of interest. Therefore, the Design Basis Earthquake is what the Nuclear Regulatory Commission licenses and regulates a specific nuclear power plant to withstand.

The Design Basis Earthquake therefore provides the all important licensing basis for North Anna’s nuclear power plant’s controlling earthquake design criteria for all safety-related systems, structures and components (SSC) to include seismic demand, structural capacity, load combinations and acceptance criteria for special structures and ductile detailing requirements.

Given that both the Operational Basis Earthquake and the Design Basis Earthquake are determined were exceeded for the geographic region of interest of Mineral, Virginia, the Petitioners assert that the OBE and the DBE no longer provide a reliable standard of reasonable assurance that the North Anna units have been adequately analyzed for the actual earthquake potential for the region of interest.

Because of the August 23 quake exceedence, the Petitioners contend that the calculations that went into formulating the original Operational Basis Earthquake and

⁶ Appendix S to Part 50—Earthquake Engineering Criteria for Nuclear Power Plants
<http://www.nrc.gov/reading-rm/doc-collections/cfr/part050/part050-apps.html>

the Design Basis Earthquake are no longer accurate or reliable. The Petitioners contend that any modifications to a corrected and more accurate Design Basis Earthquake to safety systems analyzed conditions during any subsequent earthquake should be conducted through a formal license amendment process and in accordance with the opportunity of full public hearing rights.

The Petitioners argue that the August 23, 2011 seismic event is not currently included in the licensee's Updated Final Safety Analysis Report, Table 5.2-4, faulted conditions (Design Basis Earthquake) and not included in the fatigue analysis of the plant components and structures.⁷ Also, the Operating Basis Earthquakes are not included in the fatigue analysis. Thus, to the extent that North Anna experienced an earthquake event well-outside the plant's safety design and licensing basis, both Units 1 & 2, are in an unanalyzed condition – which Petitioners allege prohibits the NRC from granting restart authorization - until the licensee can obtain a license amendment by request from the NRC accordingly supported by a new seismic evaluation and plant retrofit with the opportunity for full public hearing rights.

The Petitioners therefore request that the NRC take emergency enforcement action by issuing an Order that VEPCO submit a license amendment request to reanalyze the Design Basis Earthquake for North Anna nuclear station so as to appropriately and accurately bench mark safety margins for reliably assessing and improving the plant's designed earthquake response accordingly. Petitioners contend that without first

⁷ Updated Final Safety Analysis Report for North Anna Power Station, Revision 45, 09/30/2009, ADAMS Accession number ML092820154

establishing an accurate Design Basis Earthquake, reliable plant response and mitigation measures cannot be established with any reasonable assurance.

NRC has identified in “Application to Engineering Design” (3) *Required Seismic instrumentation. Suitable instrumentation shall be provided so that the seismic response of nuclear power plant features important to safety can be determined promptly to permit comparison of such response with that used as the design basis. Such a comparison is needed to decide whether the plant can continue to be operated safely and to permit such timely action as may be appropriate.*’ [10 CFR100 Appendix A, VI (a)(3)]

The Petitioners contend that the proper location of the seismic instrumentation is necessary to qualify the same instrumentation as “suitable” so as to provide the stated comparison to “decide whether the plant can continue to be operated safely and to permit such timely action as may be appropriate.” Given that the NRC inspectors identified “unresolved issues”⁸ with the seismic instrumentation at North Anna being suitably located so as to provide accurate and reliable seismic data, the Petitioners contend that misplacement of seismic measuring equipment at North Anna introduces a undetermined amount of uncertainty in the actual exceedence of North Anna earthquake design capacity. The Petitioners argue this is basis for the suspension of restart and the requested enforcement action requiring the licensee to submit to the license amendment request process to make any further modifications to Seismic Engineering Design and appropriately relocate seismic instrumentation.

⁸ “NRC continues post-earthquake inspections at North Anna,” Platts Inside NRC , Vol. 33, #21, October 10, 2011, P.9

In summary, the Petitioners assert that NRC lacks authority to grant restart authorization to the licensee for the reasons stated above and because the licensee cannot demonstrate to the Commission that no functional damage occurred to those features necessary for continued operation without undue risk to the health and safety of the public. For such reason, the Petitioners contend that prior to restart the licensee be required to submit a formal license amendment request subject to the opportunity for full public hearing rights.

- 2) Prior to restart approval NRC shall require that both North Anna Units 1 and 2 be subject to the same level and rigor of deterministic inspections and safety analyses that include the full reactor core offload inspections of the condition of safety-related reactor core internals, fuel core assemblies and control rod mechanism for both units to reasonably assure the same level of deterministic oversight of both units and a focus on public health and safety over a industry production agenda.

In view of the acknowledged exceedence of both the Operating Basis Earthquake (OBE) and Design Basis Earthquake (DBE) necessary to qualify safe operations at North Anna Units 1 & 2 and the NRC inspection finding⁹ that Virginia Electric Power Company mislocated onsite seismic measuring equipment, both units 1 & 2 shall be

⁹ "NRC continues post-earthquake inspections at North Anna," Platts Inside NRC , Vol. 33, #21, October 10, 2011, P.9

subjected to the same level of inspection with particular attention to full core offload, reactor internal inspection, fuel core assemblies and control rod guide and drive mechanisms in both Unit 1 and Unit 2 for the purpose of providing reasonable assurance to the public health and safety.

The Licensee is subject to compliance with operating license conditions established under Appendix A General Design Criterion 2. In this part, the NRC states under the Earthquake Engineering Criteria for Nuclear Power Plants, Seismic and Geologic Design Bases;

“(3) Required Plant Shutdown. If vibratory ground motion exceeding that of the Operating Basis Earthquake Ground Motion or if significant plant damage occurs, the licensee must shut down the nuclear power plant. If systems, structures, or components necessary for the safe shutdown of the nuclear power plant are not available after the occurrence of the Operating Basis Earthquake Ground Motion, the licensee must consult with the Commission and must propose a plan for the timely, safe shutdown of the nuclear power plant. Prior to resuming operations, the licensee must demonstrate to the Commission that no functional damage has occurred to those features necessary for continued operation without undue risk to the health and safety of the public and the licensing basis is maintained.” Emphasis added. [Title 10 CFR Appendix S to Part 50 IV 3, Application to Engineering,]¹⁰

Further, the Petitioners find:

¹⁰ <http://law.justia.com/cfr/title10/10-1.0.1.1.29.0.116.85.40.html>

“(4) Required Seismic Instrumentation. Suitable instrumentation must be provided so that the seismic response of nuclear power plant features important to safety can be evaluated promptly after an earthquake.” Emphasis added. [Title 10 CFR Appendix S to Part 50 IV 4, Application to Engineering]¹¹

The Petitioners have contended that both the NRC and Virginia Electric Power Company admit that the licensing basis was exceeded for both the Operating Basis Earthquake and Design Basis Earthquake. Petitioners contend that Virginia Electric Power Company must therefore make application for a formal license amendment request for reanalysis, modifications and changes to the North Anna nuclear power plant licensing basis.

The Petitioners argue that it is reasonable to interpret that “suitable instrumentation” means instrumentation suitably located and positioned so as to provide a reliable and accurate measure of any seismic activity. The Petitioners contend that given that the NRC post earthquake inspections have identified “unresolved issues” regarding the finding that the North Anna seismic measuring equipment was misplaced onsite by Virginia Electric Power Company as needed to accurately and reliably measure the ground motion acceleration on the North Anna systems, structures and components, the operator cannot reasonable demonstrate that it has maintained “suitable” seismic measuring devices onsite. The Petitioners argue that the suitability of the seismic measuring devices must be applied equally to both units. The NRC finding that the

¹¹ Ibid

North Anna seismic measuring instrumentation was not suitably located concerns the Petitioners with regard to the accuracy and the reliability of the seismic data recorded and collected for both of the units at North Anna reactor site which experienced the August 23, 2011 earthquake.

The Petitioners therefore contend that because of the mislocated measuring equipment and therefore the lack of “suitable” seismic measuring devices for either and/or both reactors both units, the Petitioners request that NRC suspend the restart and operations and issue an Order that both reactors units be subjected to the same level and rigor of deterministic inspections including inspections following full core offload of both units.

- 3) Virginia Electric Power Company shall be required to reanalyze and re-qualify the adequacy and condition of the Lake Anna dam given the North Anna nuclear power station’s Design Basis Earthquake criteria was exceeded by the earthquake on August 23, 2011 so as to provide reasonable assurance of the one mile long earthen dam’s reliability as a reactor safety-related structure;

The Petitioners focus their concern on the post-earthquake condition and reliability of the Lake Anna dam as it pertains to the safe operation and safe shutdown maintenance of the North Anna nuclear power station following an earthquake and/or flooding event. The Petitioners find that the American Society of Civil Engineers identified in its [“Report Card”](#) for 2009 Virginia Infrastructure that aging infrastructures in the State of Virginia that are crumbling. The ASCE evaluation includes the state’s dams generically receiving a “D-“. While the state dam infrastructure issue does not specifically identify the Lake

Anna earthen dam, the poor grade identifies overall the State of Virginia does not have sufficient capacity and resources to independently inspect and oversee the Lake Anna dam. The Petitioners contend that Virginia Electric Power Company is the only entity inspecting and overseeing the dam therefore the analysis and detailed findings of its dam inspection are kept on-site at North Anna nuclear power station and not made part of any public record.

Petitioners assert that public transparency for the reanalysis of the integrity and earthquake durability of the Lake Anna dam is necessary and warranted.

The Petitioners assert that 10 CFR APPENDIX A TO PART 100—SEISMIC AND GEOLOGIC SITING CRITERIA FOR NUCLEAR POWER PLANTS further provides at V. Seismic and Geologic Design Bases under *(3) Cooling water supply. Assurance of adequate cooling water supply for emergency and long-term shutdown decay heat removal shall be considered in the design of the nuclear power plant, taking in to account information concerning the physical properties of the materials underlying the site developed pursuant to paragraphs (a)(1), (3), and (4) of section IV and the effects of the Safe Shutdown Earthquake and the design basis for surface faulting. Consideration of river blockage or diversion or other failures which may block the flow of cooling water, coastal uplift or subsidence, or tsunami runup and drawdown, and failure of dams and intake structures shall be included in the evaluation, where appropriate.*¹²

¹² 10 CFR Appendix A TO Part 100—Seismic and Geologic Siting Criteria for Nuclear Power Plants, <http://www.nrc.gov/reading-rm/doc-collections/cfr/part100/part100-appa.html>

The Petitioners assert that Lake Anna Dam is critical reactor safety infrastructure to provide adequate and reliable reactor cooling capability following an earthquake. Because the August 23 earthquake exceeded the North Anna Design Basis Earthquake criteria, the Petitioners contend that reanalysis of the earthquake criteria for the Lake Anna dam falls into the criterion category “*where appropriate*” and be required as part of the reevaluation of licensing basis for new earthquake criteria and any retrofit. The Petitioners request that because this represents a significant reassessment of the North Anna licensing basis that NRC issue an Order to require the licensee to submit a license amendment request subject to opportunity of full public hearing rights.

- 4) Given the historical evidence that Virginia Electric Power Company was fined for making significant and deliberate material false statements to the federal licensing agency affecting the original North Anna Design Basis Earthquake criteria and given that the site’s earthquake design criteria were exceeded by the August 23, 2011 earthquake, the NRC shall Order that Virginia Electric Power Company (Dominion) be held accountable for all further representations of material fact regarding the two unit North Anna reactor being sited on an earthquake fault and further reanalysis and plant modifications by making a formal license amendment request with the opportunity for full public hearings rights.

The Petitioners assert that the historical record documents that Virginia Electric Power Company's attempted to willfully obfuscate and knowingly misrepresent multiple accounts of material fact regarding North Anna reactor site earthquake siting issues in the reactor construction and operating license application process.

Virginia Electric Power Company's original Design Basis Earthquake calculations for North Anna were procedurally marred and factually discredited by the company's own deliberate falsification of material fact to the federal licensing agency on the earthquake potential analyzed in the original license application.

The Blue Ridge Environmental Defense League authored an investigative report entitled "[Geological Faulting Under the North Anna Nuclear Power Plant: An Investigative Report](#)," documenting this historical record of deception and obfuscation by Virginia Electric Power Company, also known as Dominion, where the power company withheld documents and lied to federal regulators during the license application proceedings for North Anna Units 1 and 2 leading up to 1973. "Ultimately, VEPCO was found guilty of lying and covering up in its efforts to obtain a construction license for North Anna nuclear station near Louisa, Virginia. Despite the deceptions, the US Nuclear Regulatory Commission granted Vepco a license but fined the company \$32,000 for seven materially false statements about the geologic fault under North Anna."¹³

The Petitioners assert that a historical record regarding the procedurally marred and discredited siting process on a seismic fault line does not engender public trust in

¹³ "Geological Faulting Under the North Anna Nuclear Power Station: The History of Dominion-Virginia Power's Seismic Cover-Up; An Investigative Report," Blue Ridge Environmental Defense League, October 8, 2005, http://www.bredl.org/pdf3/051008_factsheet_Allegation2005A0014.pdf

further Virginia Electric Power Company's "good faith efforts." Given the current reactor site location following the August 23, 2011 earthquake which exceeded the nuclear power plant earthquake design criteria, the current site location raises more questions and concerns, not less, for additional safety margin and mitigation analysis and efforts that may expose the company to significant retrofit cost and financial risks. The reactor cannot now be relocated. The reactor earthquake design criteria must be thoroughly reanalyzed. The Petitioners contend that the location of North Anna nuclear station on a seismically active fault line raises significant questions on whether or not the earthquake design criteria can be reasonably modified or whether the operating license must be permanently revoked. Given the company's history of making deliberate material false statements for financial gain, the Petitioners contend that the Virginia Electric Power Company must now be held to a transparent standard by the license amendment request process which regards the public health and safety through its opportunity for public hearings.

The proverbial adage "One lie ruins a thousand truths" now applies more appropriately than ever to Virginia Electric Power Company, the siting and the restart of operations of the North Anna nuclear power station on an active earthquake fault line.

As such, the Petitioners assert that the NRC is mandated with obligations to the public health and safety as the federal safety oversight and enforcement agency. As such, the Petitioners contend that the agency has the prerogative in special circumstances to require a more publicly transparent and inclusive process to afford the public its due process and to hold this particular license to a transparent standard. The agency is

provided under 10 CFR § 50.100 Revocation, suspension, modification of licenses, permits, and approvals for cause. *“A license, permit, or standard design approval under parts 50 or 52 of this chapter may be revoked, suspended, or modified, in whole or in part, for any material false statement in the application or in the supplemental or other statement of fact required of the applicant; or because of conditions revealed by the application or statement of fact of any report, record, inspection, or other means which would warrant the Commission to refuse to grant a license, permit, or approval on an original application (other than those relating to §§ 50.51, 50.42(a), and 50.43(b)); or for failure to manufacture a reactor, or construct or operate a facility in accordance with the terms of the permit or license, provided, however, that failure to make timely completion of the proposed construction or alteration of a facility under a construction permit under part 50 of this chapter or a combined license under part 52 of this chapter shall be governed by the provisions of § 50.55(b); or for violation of, or failure to observe, any of the terms and provisions of the act, regulations, license, permit, approval, or order of the Commission.”*¹⁴

The Petitioners contend that given the Nuclear Regulatory Commission’s previous findings and penalizing of Virginia Electric Power Company for violations of making material false statements on earthquake criteria to the licensing agency in the original North Anna siting, construction and operational application, the Petitioners request the NRC to issue an Order requiring Virginia Electric Power Company submit a license

¹⁴ [10 CFR 50.100, Revocation, Suspension, Modification, Amendment of Licenses and Construction Permits, Emergency Operations by the Commission, http://www.nrc.gov/reading-rm/doc-collections/cfr/part050/part050-0100.html](http://www.nrc.gov/reading-rm/doc-collections/cfr/part050/part050-0100.html)

amendment request for the reanalysis of its licensing basis for reactor earthquake design criteria and provide the opportunity for public hearing.

5) Virginia Electric Power Company must re-evaluate and reanalyze its Independent Spent Fuel Storage Installations' pads and dry casks in light of the damage done to them and the impacts documented at them due to the August 23rd earthquake, in order to determine that seismic safety and stability is reasonably assured going forward at North Anna nuclear power plant; likewise, NRC must verify that its earthquake safety regulations for dry cask storage, including 10 CFR § 72.212(b)(2) (i)(B) and 10 CFR § 72.212(b)(3), are in full regulatory compliance and not being violated, as well as for its dry cask Certificates of Compliance and dry cask technical specifications at North Anna. These re-analyses and re-evaluations require re-writing both the Safety Evaluation Report and the Safety Analysis Report in regards to the ISFSIs, as well as strengthening technical design criteria for dry cask storage at North Anna to reasonably assure seismic safety. Both VEPCO and NRC must publicly ensure that dry cask radiation shielding and cask cooling systems, structures, and components were not negatively impacted by the earthquake damage and impacts of August 23rd, 2011, in order to adequately protect worker and public safety and health and the environment, and to reasonably assure regulatory compliance, given the high radiological hazards represented by the irradiated nuclear fuel storage within the ISFSIs.

Pursuant to § 2.206 of Title 10 of the Code of Federal Regulations, and on behalf of the Petitioners listed herein, we petition the Nuclear Regulatory Commission to take emergency enforcement action in order to verify that the so-called “Independent Spent Fuel Storage Installations” (ISFSIs) – including both the concrete storage pads that form the bases for the dry casks, as well as the dry casks containing irradiated nuclear fuel -- conform with longstanding NRC requirements for earthquake stability and safety.

It took more than a week after the earthquake of August 23, 2011, for Virginia Electric Power Company (Dominion) to finally admit and disclose that both its vertical dry casks, as well as its horizontal dry casks, had been impacted and even damaged. This long delay occurred even though a Dominion spokesman admitted to CNN that it knew about the impacts the very day of the earthquake, and despite repeated questions by a CNN team to Dominion officials onsite at North Anna the day of and the day after the earthquake regarding earthquake damage to the North Anna nuclear power plant, of which the ISFSIs are part and parcel.¹⁵

As reported by the *Washington Post* and CNN, 25 of 27 vertical dry casks at North Anna --each 16 feet tall, weighing 115 tons, and storing at least 15 tons of highly radioactive irradiated nuclear fuel -- were shifted by as much as several inches on their storage pad.¹⁶ This shifting is documented in photos [Exhibits 1- made public by

¹⁵ Reporter Brian Todd on “The Situation Room with Wolf Blitzer,” CNN, segment entitled “More Storm Worries; President Obama Under Fire,” Aired September 1, 2011 - 18:00 ET, relevant excerpt of transcript posted online at <http://www.beyondnuclear.org/storage/transcript%20Kevin%20on%20CNN%209%201%202011.pdf>, full transcript posted online at <http://transcripts.cnn.com/TRANSCRIPTS/1109/01/sitroom.02.html>.

¹⁶ Brian Vastag, “Quake shifted nuclear storage containers at Virginia plant,” *Washington Post*, September 1, 2011 and; Brian Todd, “Officials: Virginia quake shifted nuclear plant’s storage casks,” CNN, September 1, 2011.

Dominion. In addition, an undisclosed number of 13 loaded, and an additional 13 empty, horizontal dry casks suffered partial damage when surface concrete fell off, surface cracks appeared, or concrete panel slabs moved, due to the earthquake, again, as reported by the major news media mentioned above, and as revealed in photographs published by Dominion on or about September 5, 2011. All of these photos made public by Dominion are attached, for the record.

Given the intensity of the August 23, 2011 earthquake with an epicenter so near North Anna, significant questions remain regarding damage done to the ISFSIs, the current status of the structural integrity of the ISFSIs, and their ability to withstand potential future earthquake forces epi-centered in the vicinity. NRC must determine that North Anna's ISFSIs are not in violation of NRC earthquake safety regulations.

NRC's map entitled "U.S. Independent Spent Fuel Storage Installations" indicates that one of North Anna's ISFSIs is a "generic licensed" ISFSI, while the other is a "specific licensed" ISFSI.¹⁷

At least regarding "generic licensed" ISFSIs, 10 CFR § 72.212, "Conditions of general license issued under § 72.210," at subpart (b)(2)(i)(B), requires that:

"[The general licensee shall...Perform written evaluations, prior to use, that establish that:] Cask storage pads and areas have been designed to adequately support the static and dynamic loads of the stored casks, considering potential amplification of

¹⁷ NRC map, "U.S. Independent Spent Fuel Storage Installations," posted online at <http://www.nrc.gov/waste/spent-fuel-storage/locations.pdf>.

earthquakes through soil-structure interaction, and soil liquefaction potential or other soil instability due to vibratory ground motion. . . “.

10 CFR § 72.212(b)(3) further requires that:

“[The general licensee shall:] Review the Safety Analysis Report (SAR) referenced in the Certificate of Compliance and the related NRC Safety Evaluation Report, prior to use of the general license, to determine whether or not the reactor site parameters, including analyses of earthquake intensity and tornado missiles, are enveloped by the cask design bases considered in these reports. The results of this review must be documented in the evaluation made in paragraph (b)(2) of this section.”

Neither the general licensee Virginia Electric Power Company (Dominion), nor the NRC itself, has yet performed an adequate analysis or evaluation of the status of North Anna's ISFSIs and their structural integrity after the August 23, 2011 earthquake. For example, questions must be answered regarding potential loss of radiation shielding due to the damage to North Anna's horizontal dry casks, including concrete falling loose, concrete cracking, and gaps opening up in between concrete slab panels on horizontal dry casks, all documented in the attached photos released by Virginia Electric Power Company (Dominion) itself. Such potential loss of radiation shielding would be of greatest danger to Dominion's own workers, as well as NRC inspectors. However, given the presence of increased numbers of journalists (as on the day of and the day after the earthquake) and concerned citizens (as at NRC's public meeting held at the Information Center there on October 3rd, 2011) at the North Anna nuclear power plant site due to the August 23rd, 2011 earthquake, radiation hazards to members of the public must also be guarded against.

Also, the documented damage to horizontal dry cask surface concrete, as well as shifting of vertical dry casks (especially closer together, one cask to the next) must be evaluated in terms of its negative impacts upon convection current air flow circulation, and other cooling mechanisms, needed for cooling the irradiated nuclear fuel stored within, as required by NRC's Certificates of Compliance, as well as relevant technical design specifications.

Of course, NRC should also require Dominion to investigate, and publicly disclose, all findings, regarding any impacts or damage to *internal* dry cask components, *within* both vertical and horizontal dry casks deployed at North Anna's ISFSIs. The public's trust and confidence has been repeatedly violated and betrayed by the licensee at North Anna, especially considering the seven materially false statements Virginia Electric Power Company (Dominion) made about seismic risks at the North Anna site prior to reactor construction and operation in the 1960s and early 1970s, as well as Dominion's more recent 8 day delay in publicly admitting the damage done to dry casks and impacts at its ISFSIs in the aftermath of the August 23rd quake, despite its knowledge of such impacts and pointed questioning from news media. NRC should ensure that its safety regulations regarding dry cask storage, including its Certificates of Compliance and technical design specifications, are not being violated due to damage already caused by the August 23, 2011 quake and at North Anna's ISFSIs. Also, NRC must enforce its various earthquake safety regulations to ensure that any future earthquakes at or near the North Anna nuclear power plant do not put at risk public health and safety and the environment due to regulatory violations involving the ISFSIs' pads or dry casks.

Virginia Electric Power Company (Dominion) and NRC have also failed to conduct a rigorous reanalysis and re-evaluation of the SAR (Safety Analysis Report) and SER (Safety Evaluation Report), respectively, regarding the North Anna ISFSIs' design criteria and technical specifications in light of the August 23 earthquake's impacts, in terms of the risk of future earthquakes at or near the North Anna nuclear power plant. As Robert Alvarez, senior scholar at Institute for Policy Studies and former senior advisor to the U.S. Secretary of Energy, stated to the *Washington Post*:

"This indicates that reactors that have these dry casks in these earthquake prone areas, they're going to have to do more to protect them from ground motion," said Robert Alvarez from the Institute for Policy Studies, who has extensively studied nuclear waste storage. "One thing is to bolt them to the pads. And that's not a Home Depot-type job. The pads themselves also need to be examined to see if they're durable enough."¹⁸ Likewise, the dry casks themselves also need to be examined to provide reasonable assurance that they too are capable of withstanding the potential for destructive forces caused by earthquakes at North Anna nuclear power plant.

Casks specially designed to withstand earthquakes have been deployed at such seismic sites as the decommissioned Humboldt Bay nuclear power plant in northern California. NRC must now evaluate whether enhanced seismic safeguards are necessary at North Anna, not only in light of the August 23rd quake epi-centered just over 10 miles away, but also due to the presence on the North Anna site itself of fault

¹⁸ Brian Vastag, "Quake shifted nuclear storage containers at Virginia plant," *Washington Post*, September 1, 2011.

lines. These enhanced seismic standards must be evaluated for both the ISFSI pads, as well as the casks that sit atop them.

NRC must enforce its earthquake safety regulations and require that the licensee, Virginia Electric Power Company (Dominion), “perform written evaluations, prior to use, that establish that” reasonable assurance exists that 10 CFR § 72.212(b)(2) (i)(B) and 10 CFR § 72.212(b)(3) requirements are met at North Anna’s ISFSIs. Likewise, NRC must ensure that its Certificates of Compliance, and the technical design specifications, for dry casks deployed at North Anna are adequate to guard against the potential for destructive forces caused by earthquakes so clearly demonstrated as applicable to the Mineral, Virginia area of concern.

In order for NRC to fulfill its legally binding mandate under the Atomic Energy Act to protect public health and safety and the environment, it must provide reasonable assurance that all applicable agency earthquake safety and stability regulations are not being violated at North Anna’s ISFSIs regarding both the pads, and the dry casks stored upon them.

Conclusion

For all of the foregoing findings and reasons, the Petitioners request relief through the suspension of the North Anna nuclear power plant restart and operation pending the modifications implemented through the aforementioned emergency enforcement actions.

Signed,

October 20, 2011

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Paul Gunter and Kevin Kamps
Beyond Nuclear
6930 Carroll Avenue Suite 400
Takoma Park Md, 20912
Phone: 301 270-2209
paul@beyondnuclear.org kevin@beyondnuclear.org www.beyondnuclear.org

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Thomas Saporito, Senior Consultant
Saprodani Associates
Post Office Box 8413,
Jupiter, Florida 33468
Phone: [\(561\) 972-8363](tel:5619728363)
Email: thomas@saprodani-associates.com
Web: <http://Saprodani-Associates.com>

-----/s/-----

Paxus Calta
Not On Our Fault Line
56 Tupelo Ridge Rd.
Louisa, VA 23093
Phone: 541-505-0803
Email: paxus.calta@gmail.com

-----/s/-----

Alex Jack
Planetary Health, Inc.
305 Brooker Hill Road
Becket, MA 01223
Phone: [413-623-0012](tel:4136230012)
Email: shenwa@bcn.net
www.amberwaves.org

-----/s/-----

Scott Price
Public Policy Director
Alliance for Progressive Values
PO Box 14664
Richmond Va. 23221
Phone: [804-573-9635](tel:8045739635)
Email: sprice@apvonline.org
www.APVonline.org

-----/s/-----

John A. Cruickshank, Chair
Sierra Club - Virginia Chapter
422 East Franklin St.
Richmond, VA 23219
Phone: [434 973-0373](tel:434-973-0373)
Email: jcruickshank4@gmail.com
<http://www.vasierraclub.org/>

ATTACHMENTS:

EXHIBITS 1-4

EXHIBIT 1. North Anna Horizontal Dry Cask Concrete Falling Off



Roof Vents

EXHIBIT 2. North Anna Horizontal Dry Cask Concrete Slab Movement



EXHIBIT 3. North Anna Vertical Dry Cask Shifty 1



EXHIBIT 4. North Anna Vertical Dry Cask Shifting 2

